Performance Audit
Trash Collection Cost Data

November 2003

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City Auditor's Office

City of Kansas City, Missouri

7-2003

November 24, 2003

Honorable Mayor and Members of the City Council:

We conducted this performance audit of trash collection data reported by the Department of Environmental Management after receiving complaints about the quality of information the department was providing to the City Council. The audit focuses on the accuracy of reported cost data.

In presentations to the City Council, the Department of Environmental Management understated the cost per household for city crews to pick up residential trash. Management calculated the cost per household using an unsupported estimate of 70,000 households eligible for trash collection within the city's collection area. Although management knew that this estimate was likely to be high, they did not correct the number or disclose the limitations of using the estimate. Management also misrepresented the nature of the analysis used to evaluate bids for residential trash collection service.

The City Council depends on management for information in order to fulfill their responsibilities. In this case, the City Council was not aware of data limitations in the benchmark used to evaluate bids and accepted management's recommendation to reject all bids. However, without more accurate data, it is not clear that the decision to retain the service in-house saved the city money. Our point is not to second guess the city's decision to retain the service in-house – the low bid was considered unresponsive – but to emphasize the need for management to provide the City Council with complete and accurate information and to describe limitations when information is uncertain.

The City Manager should set guidelines for departments to follow in collecting and reporting performance information. Following such guidelines could establish a more productive relationship between staff and elected officials, and help ensure that the City Council has good data when making decisions.

We sent a draft of this report to the City Manager and Director of Environmental Management on September 5, 2003. Management's response is appended. We appreciate the courtesy and cooperation extended to us by the staff of the Department of Environmental Management and City Planning and Development throughout the audit. The audit team for this project was Julia Talauliker and Amanda Noble.

Mark Funkhouser
City Auditor

Trash Collection Cost Data

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Introduction

Objectives

We conducted this audit of trash collection cost data pursuant to Article II, Section 13 of the Charter of Kansas City, Missouri, which establishes the Office of the City Auditor and outlines the City Auditor's primary duties. A performance audit is an objective, systematic examination of evidence to independently assess the performance of a government organization, program, activity, or function in order to provide information to improve public accountability and facilitate decision-making.[1] We designed this audit to answer the following questions:

- Did the Department of Environmental Management misrepresent the number of households to which it provides residential refuse collection service?
- If yes, what are the effects of the misrepresentation?

We undertook this audit because we received complaints that the Department of Environmental Management had misrepresented the number of households from which it collects trash thereby underestimating the cost per household of residential trash collection.

Scope and Methodology

We conducted this audit in accordance with generally accepted government auditing standards. Our methods included:

- Interviewing staff in the Solid Waste Division and City Manager's Office.
- Reviewing information that the Department of Environmental Management presented to the City Council between April and October 2002.
- Reviewing household data available from other sources to verify the number of eligible households.

[1] Comptroller General of the United States, *Government Auditing Standards* (Washington, DC: U.S. Government Printing Office, 1994), p. 14.

- Visiting 100 randomly selected addresses to test the accuracy and completeness of the city's household data.

No information was omitted from this report because it was deemed privileged or confidential.

Background

The Department of Environmental Management's Solid Waste Division is responsible for collecting and disposing of residential trash in the city. City crews pick up trash in the area south of the Missouri River to 63rd Street. Contract crews pick up trash in the rest of the city. Crews pick up trash from residences with six or fewer units, except for some neighborhoods where the homes association contracts for service. The city spent about $9.5 million in fiscal year 2002 for residential trash collection.

The Department of Environmental Management solicited bids in July 2002 for residential trash collection and disposal services for about 17,000 households within the city's collection area. Contracting for service for these households was intended to reallocate resources to bulky item pick-up and provide an opportunity for MBE participation in the city's trash collection contract. MBE participation was waived for the current contract, which has been renewed through April 2004. The department received two bids in August of 2002 but management recommended rejecting the bids. The department considered the low bid unresponsive because it did not include MBE participation. The other bid was much higher than the city's estimated break-even cost.

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Findings and Recommendation

Summary

The Department of Environmental Management understated the cost per household of collecting trash in presentations to the City Council. Management calculated the cost per household using an unsupported estimate of 70,000 households eligible for trash collection within the city's collection area. Although management knew that their estimate of the number of eligible households in the area was likely to be too high, they did not correct the number or disclose the limitations of the estimate.

Management also misrepresented the nature of the analysis used to evaluate bids for residential trash collection. In a September 2002 memorandum to the Mayor and City Council outlining the results of the bid process, management characterized a consultant's cost review as an independent audit and attributed the estimated cost per household to the consultant. The consultant report stated that the nature of the review was different from an audit because the analysis relied on some unverified data and verbal estimates provided by management. While the report estimated the total direct costs of trash collection and the amount that could be saved by contracting service for additional households, the consultant did not calculate the cost or savings per household.

The City Council depends on management for information in order to fulfill their responsibilities. In this case, the Council was not aware of data limitations in the benchmark used to evaluate contractors' bids and accepted management's recommendation to reject all bids. However, without more accurate data it is not clear that the decision to retain the service in-house saved the city money.

Management should provide the City Council with accurate information and describe limitations when information is uncertain. The City Manager should set guidelines for departments to follow in collecting and reporting information. Following such guidelines could improve the credibility of management reporting, help establish a more productive relationship between staff and elected officials, and help ensure that the City Council has good data when making decisions.

City Manager Should Provide Guidelines on Quality of Information

In presentations to the City Council, the Environmental Management Department understated the cost per household for city crews to pick up residential trash. Because the City Council depends on management for accurate information, the City Manager should establish guidelines for departments to follow in collecting and reporting performance information.

Environmental Management Understated Cost of Collecting Trash

Environmental Management understated the cost per household of picking up trash within the city's collection area and misrepresented a consultant's cost study as an independent audit. Management used its cost estimate as a benchmark in evaluating bids in September 2002, but did not disclose significant assumptions and limitations in the data. The City Council accepted management's recommendation to reject all bids. However, without more accurate data, it is not clear that this decision saved the city money.

Calculation based on uncertain data. Environmental Management reported that the cost for city crews to collect trash in fiscal year 2002 was $4.42 per household per month. To calculate this figure, management needed to know the costs associated with residential trash collection and the number of households served. Environmental Management did not directly track either of these figures and relied on estimates. The department hired a consultant to review division costs that should be allocated to trash collection because solid waste crews also spend time on other activities such as bulky item pickup. Because Environmental Management was no longer updating its database of addresses eligible for trash collection in the city's service area, the department assumed that city crews served 70,000 households per month.

The Director of Environmental Management told us that he does not know the number of eligible households in the city's service area, but the department did not have the resources to devote to a study. He said that in the absence of better data, he decided that 70,000 eligible households was a reasonable estimate. However, Environmental Management staff used water billing records and conducted field visits in August 2002 to test a sample of about 3,000 out of 58,300 addresses in the database. [2] Staff concluded that about 700 of the addresses checked (23 percent)

[2] The database shows which addresses are multi-unit structures, but does not record the number of units. Nearly half of the addresses in the database are multi-unit structures.

were non-existent, vacant, or commercial properties. Extrapolating from their tests, staff estimated there were about 53,100 eligible households in the city's service area. While the method of extrapolation had some weaknesses – the tests would not identify addresses not in the database and it is difficult to determine the number of vacant units in multi-unit structures by viewing it from the street – the director had some information that an estimate of 70,000 eligible households was too high.

Census data show fewer than 70,000 households in the city's service area. Using 2000 Census data, City Planning and Development estimated that there are about 61,100 households between the Missouri River and 63rd Street eligible for city trash collection.[3] This is about 13 percent lower than the 70,000 households that the director assumed in calculating cost per household.

Environmental Management underestimated the cost per household. If Environmental Management had calculated the cost per household using 61,100 units, the monthly cost per household of collecting trash would have been $5.06, not $4.42, about 14.5 percent higher. Environmental Management reports the cost per household for city crews as a performance indicator to the City Council. The department has understated its costs in presentations to the Council.

Benchmark to evaluate bids was based on uncertain assumptions. Environmental Management hired a consultant to review its costs and calculate the incremental savings of contracting out collection service for an additional 17,131 households. Based on the consultant's study, the department calculated its avoidable cost – the amount of money saved by contracting out a portion of the city's service area – as $3.64 per household per month. This figure was used as a benchmark for evaluating bids for trash collection. However, the $3.64 figure was based on a number of assumptions, including 70,000 households in the city's service area. The study also assumed, at the department's request, a less than proportional decrease in personnel costs.[4]

The Director of Environmental Management summarized the bid results in a memorandum to the Mayor and City Council dated September 9,

[3] At our request, City Planning and Development staff used 2000 Census data to estimate the number of housing units within structures of six or less units for each census block group between the Missouri River and 63rd Street. Census groups multi-family structures with five to nine units as one category. Staff estimated the proportion of units within structures of six or five units based on review of building permits issued between 1970 and 1999.

[4] Brown, Vence & Associates, Inc., Contract EM-02002-Residential Refuse Collection Cost of Service Study, August 2002, p. 4. The consultant assumed proportional decreases in equipment maintenance, equipment purchases, and disposal costs. The consultant originally estimated a proportional decrease in personnel costs that would reallocate positions from Refuse Collection to Bulky Item Collection. After talking to the department, the consultant assumed a reallocation of four permanent staff and five temporary staff rather than seven permanent and two temporary staff. This reduced the estimated savings in trash collection from about $360,000 to $256,000.

2002. Management recommended that the City Council reject all bids and continue to use city crews to serve the area. Both bids were higher than the city's benchmark. Deffenbaugh bid $4.49 per household per month, but the bid was ineligible because it did not include MBE participation. BFI bid $6.25 per household per month.

Savings estimate sensitive to assumptions. Without more accurate data, it is not clear that the decision to retain the service in-house saved the city money. We re-estimated the avoidable costs using the same cost data but assuming that city crews serve 61,100 households and assuming that the reduction in personnel costs would be proportional to the reduction in the number of households served. Changing these two assumptions yielded an avoidable cost of $4.96 per household – higher than the lowest bid for the service. Since the department considered the low bid to be unresponsive, it isn't clear that changing the analysis would necessarily have changed the outcome in this case.

Management misrepresented consultant's cost review. In his September 9, 2002, memorandum to the Mayor and City Council, the Director of Environmental Management characterized the consultant's cost review as an independent audit and stated, "The auditor concluded that the City costs were $4.42 per household per month." The consultant clearly states in the report that the work was different from an audit. The consultant report stated, "In several instances, data that was material to our overall evaluation could only be provided in the form of verbal estimates."[5] Further, the consultant estimated the city's total direct costs of collecting trash, not the cost per household.

Users of information assess its reliability based on the source. Mischaracterizing the source and nature of information misinforms the City Council about the reliability of the data presented. Environmental Management should have disclosed significant assumptions and limitations of the data underlying its analysis. Management should have reported that the consultant relied on unverified city data in his cost calculations, that the cost reduction ratio was based on an estimated number of households, and that direct personnel costs were not reduced proportionately to other costs. Management also should have disclosed the level of confidence in the assumptions and estimates used. Management could have presented a more detailed explanation of the consultant study or provided a copy of the report.

[5] Brown, Vence & Associates, Inc., Contract EM-02002-Residential Refuse Collection Cost of Service Study, August 2002, p. 2.

Council Relies on Management for Information

The City Council relies on information from staff in order to fulfill their responsibilities. It uses information reported by management to assess program performance and risks as well as important emerging issues and their resolution. The City Council uses staff reports to establish priorities for the city and to develop policy. Currently no guidelines exist on quality of information provided to the Council. The City Council needs complete and timely information they can understand and trust to be able to draw conclusions in order to make effective decisions.[6]

Trust and communication are part of an effective council-staff partnership. We've concluded in prior work that communication between Kansas City's elected officials and professional staff needs to be improved.[7]

City Manager Should Provide Guidelines on Quality of Information

Establishing general guidelines of what constitutes quality information and how information should be reported could improve credibility of management reporting and make reports more meaningful and useful to the City Council. The guidelines would also help staff to understand what is expected from them. Improving quality of performance information would help in establishing a more productive partnership between staff and elected officials.

The City Manager should set guidelines for departments to follow in collecting and reporting performance information. Guidelines should promote data integrity by encouraging departments to:

- Define quality of data by establishing an appropriate balance between cost and desired reliability of data;
- Designate who is accountable for performance data;
- Have active management participation in obtaining good quality performance data;
- Implement a set of predetermined checks covering collection, review, and verification of data; and
- Establish methods to demonstrate that the data are of acceptable quality.

[6] *Financial Condition Forum*, Office of the City Auditor, Kansas City, Missouri, September 2002, p. 7.
[7] *Budget Process Practices*, Office of the City Auditor, Kansas City, Missouri, August, 2001, p. 13.

For reporting performance information guidelines should encourage departments to:

- Describe how data were collected and analyzed;
- State the main assumptions and limitations behind the numbers;
- Explain how precise the data or the estimates are; and
- Describe how sensitive the data are to changing conditions or different assumptions.

Recommendation

1. The City Manager should develop general guidelines for departments to follow that promote data integrity in collecting and reporting performance information.

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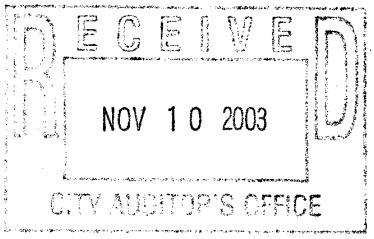
Appendix A

City Manager's Response

Office of the City Manager

Memorandum



DATE: October 27, 2003

TO: Mark Funkhouser, City Auditor

FROM: Wayne Cauthen, W.C. City Manager

SUBJECT: Response to Draft Report on Trash Collection Cost Data

The recently completed trash collection audit conducted by your department surfaced one recommendation that requires response from the City Manager's Office:

Recommendation: The City Manager should develop general guidelines for departments to follow that promote data integrity in collecting and reporting performance information.

Response: I agree with the recommendation resulting from this audit. It has been my observation that there are various iterations of the same information that is collected by multiple city departments. It concerns me that multiple departments collect the same data, yet have different results. I am also concerned that there is no apparent sharing of information between departments.

One of the steps that the city has already taken to remedy this situation is the city-wide implementation of the Enterprise Resource Project (KC-CREW). One of the basic steps taken to implement KC-CREW is the construction of a database warehouse. The database warehouse will enable all city departments to access the same information, which will result in consistent data-reporting and more reliable projections for cost and service delivery, and policy implementation when that data is manipulated by any of the city departments. The anticipated date of completion of the database warehouse is April, 2004.

Until such time as the database warehouse is completed, I will take the following steps to ensure data reliability and consistency:

1) Coordinate all departments that rely on city-wide assessment data including house counts, city property records for empty land lots and public rights of way for basic service delivery in a quarterly meeting to discuss data consistency and reliability. The most likely departments to participate in this conversation will be: Parks and Recreation, Environmental Management, Public Works, Water Services and City Planning.

2) Determine which department has the most recent data for different areas of inquiry, and designate that department as the data source for reports or programs that are reliant upon said data.

3) Recognize one person in each department to act as the database administrator, notifying all affected departments when changes or updates have been made to the database.

4) Adopt a standard disclaimer that will appear in all reports of the source of the data, the last date the study/survey was conducted that produced the data, and the methodology used to extrapolate the figures to be applicable to current conditions.

The database administrators for each department and adoption of a standard disclaimer are activities that will be undertaken by the City Managers Office immediately, and will continue until the KC-CREW project is able to address the need of uniform and consistent data for all departments.

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